REMARKS/ARGUMENTS

Drawings

The drawings are objected to because Figure 3a is missing a label corresponding to reference numeral 46. Replacing drawings for Figures 1-9, with a corrected Figure 3a, are enclosed herewith.

<u>Claim Rejections – 35 U.S.C. § 102</u>

Claims 1-13 are rejected under 35 U.S.C. § 102(e) as being anticipated by Vittal (U.S. Patent 6,810,496).

Applicant respectfully submits that Vittal discloses a <u>topology-based</u> system for identifying faults a network while the present application discloses a <u>service-based</u> (i.e., an end-to-end-connection based) problem identification and correction in a network. Vittal is concerned with individual network elements or a portion of a network which may include several network elements.

Applicant notes that a problem in a network element, or a subsystem of a network element, may affect numerous end-to-end connections which may not be contained within a network portion or a "network configuration window" (reference 1520 in Vittal). Rather, the affected end-to-end connections may span widely-distributed network elements. No mechanism is provided in Vittal for identifying alarms related to a specific end-to-end connection (a specific service) which may be of interest to an administrator of the network.

In reference to claim 1, the Examiner states that Vittal teaches a method of describing a problem in a network, comprising:

(A)   selecting a subset of alarms associated with a service, said service having a unique identifier and being carried by a path in the network;

(B)   grouping the selected subset of alarms in a number of groups, each group being associated with a network entity;

(C)   arranging the groups of alarms according to a sequence they appear in a traversal of one of the forward direction and return direction of the path of the service in the network; and

(D)   transforming each alarm in each group of the selected subset of alarms into a problem description for the service.

The four steps (A), (B), (C), and (D) are discussed below and contrasted with the method of Vittal.

Step (A)

With respect to step (A), the Examiner refers to Figure 15, reference numeral 1520, and Column 6, lines 1-17, in Vittal.

FIG. 15 in Vittal illustrates a user interface 1500 that may be incorporated in a management station for displaying network-element-application alarms, associated text, **subsystem alarms** and probable causes (Vittal, Column 12:45-49).

Vittal defines the term "**subsystem**" in Column 3:41-45, and in further detail in the descriptions FIG. 5 and FIG. 8. In column 3:41-45, Vittal states "Each network element includes a number of network element **subsystems** for implementing the functionality of the network element. The network element subsystems are designed to generate **subsystem alarms** in response to subsystem fault conditions."

Vittal **does not** suggest associating "subsystem alarms" with a particular service or a particular path. Vittal discloses a method of troubleshooting a plurality of network elements where each network element includes a plurality of network-element subsystems. The method of Vittal comprises steps of: generating a subsystem alarm in response to a subsystem fault; generating an application alarm in a subsystem application in response to the subsystem alarm; associating text with the application alarm, the associated text describing the subsystem fault;

and transmitting the subsystem alarm, the application alarm, and the associated text across the network to a management station coupled to one of the network elements for display to a user. (Please see claim 15 and the description of FIG. 5 and FIG. 6 in Vittal).

Vittal is completely silent regarding associating alarms with a service as claimed in the present application. Reference numeral 1520 in Vittal refers to a "network configuration window". As illustrated in FIG. 15, the window is **a physical entity** representing a portion of a network.

The passage in column 5: 62–column 6:18 in Vittal, which includes the passage referenced by the Examiner (column 6:1-17), further describes a process of generating individual alarms for individual subsystem **without any mention of relating subsystem alarms to a service engaging a number of subsystems**. The passage is recited below for ease of reference:

Column 5:62–Column 6:18

> "At step 602, an NOS application running on the local processor registers the local and/or external subsystem fault condition signals. For example, if subsystem 520 receives local or external fault condition signals in local processor 521, then one of the applications running on the subsystem processor (e.g., applications 523 or 524) may register or otherwise receive notification of the fault. At step 603, the subsystem application generates an application alarm in response to local and/or external fault condition signals when the local and/or external fault condition signals satisfy an application alarm condition defined in the application software. For example, if proper operation of an application requires that other subsystems are operating properly (i.e., the application has a particular subsystem dependency), then a particular subsystem fault condition may cause the application to be inoperable. Thus, the application software may define one or more application alarm conditions in accordance with subsystem dependencies. Application 523 may, for example, require that both local subsystem 520 and external subsystem 550 be completely operable in order to carry out its functionality. Thus, application 523 may include software for generating an application alarm when an alarm condition is satisfied, i.e., when a fault condition from either subsystem 520 or 550 has been received."

Vittal's topology-based troubleshooting system is described throughout the specification in US 6,810,496, and more clearly in the passage spanning column 12:54 to

column 13:10. The passage, recited below for convenience, refers to "a network menu", "parts of the network", "information about a portion of the network", and "application alarms and subsystem alarms", without any suggestion regarding means for tracking problems related to a specific service (end-to-end connection).

Column 12:54-Column13:10:

> User interface 1500 includes **a network menu** portion 1510 for allowing users to **select different parts of the network**. In response to selection, the network menu 1510 will display additional **information about that portion of the network**. User interface also includes a network configuration window 1520 for displaying the configuration of the network elements. User interface 1500 shows a ring network with four network elements, for example.
>
> User interface further includes a network alarm display 1530. Network alarm display 1530 displays all alarms in the network in columns and rows. Network alarm display 1530 displays **application alarms and subsystem alarms** in the probable cause column 1534. The associated text is displayed in additional text column 1537. Further information may also be provided about the alarm type in column 1536. Type information may also be associated with each alarm by the NOS in each network element. Network alarm display 1530 also includes a column that identifies the affected object 1531 by network element (e.g., node number) and subsystem (e.g., shelf location or span identification), a column indicating the time of the fault 1532, a column identifying the severity of the fault 1533, and a column for the user to indicate acknowledgment of each fault 1535.

Step (B)

With respect to step (B) of claim 1, the Examiner refers to Figure 15, reference numerals 1510 and 1530, in Vittal.

Applicant respectfully notes that step (B) refers to grouping alarms associated with a service. In contrast, reference 1510 of FIG. 15 refers to a "network menu portion" for allowing users to select different parts of the network, where – in response to selection – the network menu 1510 displays additional information about a portion of the network. Clearly, network menu 1510 does not group alarms relevant to a specific service.

Network alarm display 1530, referenced by the Examiner, displays all alarms in the

network. For each alarm, the display 1530 includes seven fields:

identification of an affected object (1531);

time of a fault (1532);

severity of a fault (1533);

probable cause (1534);

user-acknowledgment of each fault (1535);

alarm type (1536); and

associated text (1537).

The information in display 1530 relates to all alarms in the network and does not group the alarms in any specific order. None of the seven fields associates an alarm with a specific service. This is understood because a single alarm may result from a fault that affects numerous services and there is no facility in Vittal to associate faults (hardware-based or software-based) in a network entity with an end-to-end connection (a service) traversing the network entity.

Step (C)

With respect to step (C) of claim 1, the Examiner refers to Figure 15, reference 1530, in Vittal.

Applicant respectfully notes that step (C) refers to arranging the groups of alarms according to a sequence they appear in a traversal of the path of the service in the network

As discussed above with respect to step (B), the network alarm display 1530 does not relate an alarm to a service and, hence, step (C) is not applicable to the troubleshooting system of Vittal.

Step (D)

With respect to step (D) of claim 1, the Examiner refers to Figure 15, references 1531, 1534, 1536, and 1537, in Vittal.

Applicant respectfully notes that step (D) refers transforming each alarm in each group of alarms associated with a service into a problem description for the service. The notion of

associating an alarm with a service is absent in Vittal. References 1531, 1534, 1536, and 1537 refer to identity of an affected object, probable cause, alarm type, and an associated text, respectively. The affected object may be common to numerous end-to-end connections (services), none of which is identified in the network alarm display 1530.

Clearly, none of the steps of claim 1 of the present application is disclosed or contemplated in Vittal and it is respectfully requested that the rejection of claim 1 be withdrawn.

In reference to claim 2, the Examiner states that Vittal teaches a method of claim 1 further comprising the step of providing a corrective procedure. The Examiner refers to column 6:60-67.

The passage in column 6:60-67, recited below, describes providing information to facilitate troubleshooting:

> "Additional text corresponding to the cause of the application alarm may also be associated with the application alarm. For example, if the application alarm is generated in response to subsystem 1 alarm 1, then the text associated with the application alarm may describe the fault condition that caused subsystem 1 alarm 1. Furthermore, additional information about the probable cause of a subsystem alarm may also be included in the alarm information."

Vittal does not suggest providing a corrective procedure. Instead, a user of the system of Vittal devises a corrective procedure based on received information. Please see column 4:4-6 and column 7:19-24 recited below.

> Column 4:4-6 "A user can then **examine** the application alarms, subsystem alarms, and associated text to deduce the root cause of network faults, and **take corrective measures**."

> Column7:19-24: "Thus, features and advantages of the present invention allow a user to connect a management station to any network element in a network, and download all fault information for display on a single terminal.

Accordingly, the user **may quickly and accurately take corrective action** to restore the operability of the network."

Accordingly, it is respectfully requested that the rejection of claim 2 be withdrawn.

In reference to claim 3, the Examiner states that Vittal teaches the method of claim 1 where the network entities carrying the service comprise a node, a bay, a quadrant, a slot, a card, and a port.

Applicant notes that each of the network considered in Vittal and the network considered in the present application comprises network entities of different types. Claim 3 of the present application refers to selected network entities carrying a specific service and producing alarms while Vittal is concerned with network elements producing alarms without associating any of the network elements with a specific service.

Accordingly, it is respectfully requested that the rejection of claim 3 be withdrawn.

In reference to claim 4, the Examiner states that Vittal teaches the method of claim 1 with the step of grouping satisfying the limitation of claim 4. The Examiner refers to column 12:54–column 13:15.

Claim 4 has been reworded for clarity to read "wherein the step of grouping comprises associating each alarm in the subset of alarms with one of the network entities carrying the service". Applicant notes that step of grouping applies to <u>alarms associated with a service</u> while Vittal does not relate an alarm to a service. Column 12:54–column 13:15 describes a user interface 1500 which includes a network menu for allowing users to select different parts of the network, a network configuration window for displaying configurations of network elements, and a network alarm display.

Accordingly, it is respectfully requested that the rejection of claim 4 be withdrawn.

In reference to claim 5, the Examiner states that Vittal teaches the method of claim 1 with the step of grouping satisfying the limitation of claim 5. The Examiner refers to column 12:54–column 13:15.

Claim 5 has been reworded for clarity to read "wherein the step of grouping comprises associating at least one alarm in the subset of alarms with at least two of network entities carrying the service". Applicant notes that step of grouping applies to alarms associated with a service. As discussed above, in reference to claim 4, column 12:54–column 13:15 describes a user interface which allows a user to associate alarms to network portions.

Accordingly, it is respectfully requested that the rejection of claim 5 be withdrawn.

In reference to claim 6, the Examiner states that Vittal teaches a method of claim 1 wherein the step of transforming each alarm further comprises the step of forming one or more templates including text substitution markers. The Examiner refers to column 6:19-27 & 60-67.

Applicant notes that claim 6 refers to the step in claim 1 of transforming each alarm into a problem description <u>for a service</u> and adds a further step of <u>forming templates,</u> where a template includes <u>text substitution markers</u>. Templates with markers are illustrated in FIG.3a–FIG.3d and FIG. 8 of the present application.

Applicant respectfully submits that Vittal does not mention transforming an alarm into a problem description for a service. The passages referenced by the Examiner (recited below) describe associating text with an application alarm in a <u>specific subsystem of a network element</u> (please see FIG. 8 in Vittal). The alarm is not associated with a specific service. Additionally, Vittal <u>does not describe forming templates with text-substitution markers</u>.

> 6:19-27 in Vittal recites: "At step 604, the NOS application generating the application alarm may optionally associate predetermined text with the application alarm. In one embodiment, the NOS application will associate text with the application alarm that corresponds to the particular fault condition

signal that triggered the application alarm. The associated text may describe the particular fault that triggered the application alarm, for example."

6:60-67 in Vittal recites: "Additional text corresponding to the cause of the application alarm may also be associated with the application alarm. For example, if the application alarm is generated in response to subsystem 1 alarm 1, <u>then the text associated with the application alarm may describe the fault condition that caused subsystem 1 alarm 1</u>. Furthermore, additional information about the probable cause of a subsystem alarm may also be included in the alarm information."

Accordingly, it is respectfully requested that the rejection of claim 6 be withdrawn.

In reference to claim 7, the Examiner states that Vittal teaches the method of claim 6 wherein the text substitution markers correspond to network entities. The Examiner refers to column 6:19-27 & 60-67.

As discussed above, in reference to claim 6, Vittal does not disclose a step of using text substitution markers.

Accordingly, it is respectfully requested that the rejection of claim 7 be withdrawn.

In reference to claim 8, the Examiner states that Vittal teaches the method of claim 1 wherein the step of arranging the groups of alarms comprises arranging the group of alarms in the forward direction of the path. The Examiner refers to column 12:64–column13:10.

Column 12:64–column 13:10 in Vittal describes a user interface 1500 (FIG. 15) which includes a network menu for allowing users to select different parts of the network, a network configuration window for displaying configurations of network elements, and a network alarm display. Vittal does not relate an alarm to a path (a service or an end-to-end connection).

Accordingly, it is respectfully requested that the rejection of claim 8 be withdrawn.

In reference to claim 9, the Examiner states that Vittal teaches the method of claim 1 wherein the step of arranging the groups of alarms comprises arranging the group of alarms in the return direction of the path. The Examiner refers to column 12:64–column13:10.

As described in reference to claim 8, column 12:64–column 13:10 in Vittal describes a user interface 1500 (FIG. 15) which does not relate an alarm to a path.

Accordingly, it is respectfully requested that the rejection of claim 9 be withdrawn.

In reference to claim 10, the Examiner states that Vittal teaches the method of claim 1 wherein the type of problem comprises one or more of: a missing-channel-identification alarm; an unexpected-channel-identification alarm; a loss-of-signal alarm; and a channel power-out-of-range alarm. The Examiner refers to column 9:1-10 & 59-65.

Applicant submits that Vittal describes power-related problems as described in column 9:1-10 & 59-65. Vittal does not, however, describe problems that trigger a "missing-channel-identification alarm" or an "unexpected-channel-identification alarm". Additionally, the alarms considered in claim 10 are service-specific, which is not the case in Vittal.

Accordingly, it is respectfully requested that the rejection of claim 10 be withdrawn.

In reference to claim 11, the Examiner states that Vittal teaches the method of claim 1 wherein the description is verbal.

In reference to claim 12, the Examiner states that Vittal teaches the method of claim 11 wherein the description is an English description.

In reference to claim 13, the Examiner states that Vittal teaches the method of claim 1 wherein the description is pictorial.

Applicant notes that the use of vocal, text, or pictorial description is well known and widely used in the art. Claim 12 depends on claim 11. Claims 11 and 13 depend on claim 1 which comprises four steps each of which distinguishes claim 1 from the method of Vittal. Claims 11, 12, and 13 merely add useful limitations to a base claim believed to be allowable.

Accordingly, it is respectfully requested that the rejection of claims 11, 12, and 13 be withdrawn.

CONCLUSION

Claims 1-13 are pending. Claims 1-5 have been amended for clarity.

Claim 6, which depends on claim 1, has been amended by incorporating all the limitations of claim 1. Claims 8 and 9, which depend on claim 1 have been amended to depend on amended claim 6 which includes all the limitations of claim 1. Claim 10, which depends on claim 1, has been amended by incorporating all the limitations of claim 1.

No new material has been added to the claims.

An advisory action is kindly requested at the Examiner's earliest convenience.

Favorable consideration and allowance are earnestly solicited.

Respectfully submitted,

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